

A detailed technical line drawing in a light brown color, showing a large circular vessel with various ports, a rectangular access door, and a vertical pipe assembly with multiple flanges and valves. The drawing is a technical representation of industrial machinery.

# PYROLYSIS

**Bioforcetech  
Corporation**

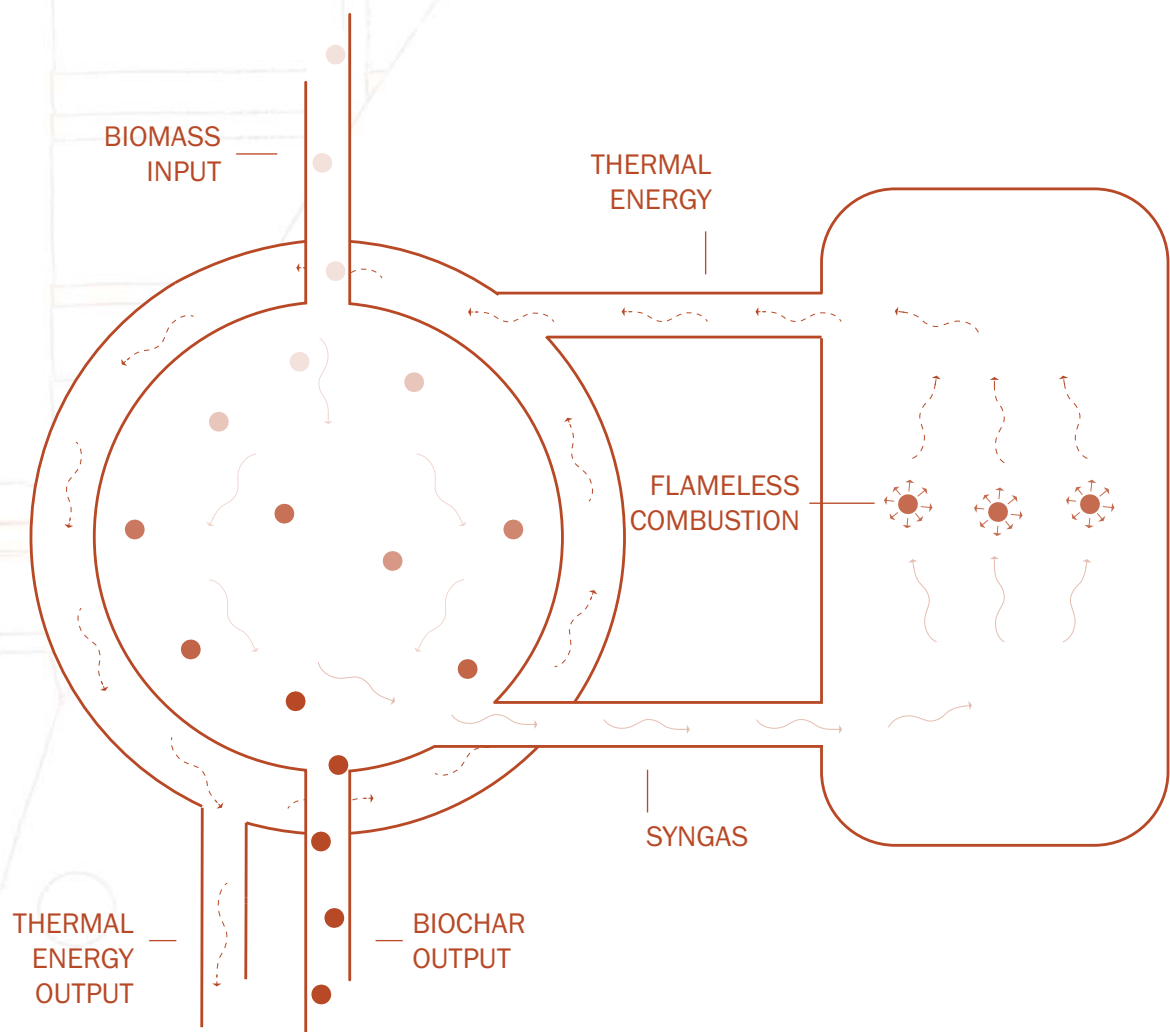
938 Linden Ave.  
South San Francisco  
California, 94080

# HOW WE DO IT

## P-SERIES PYROLYSIS

Our P-Series Pyrolysis machine transforms waste without wasting any energy. By carbonizing organic material through the application of heat in an oxygen-deprived environment, our process separates syngas from organics and utilizes it to produce high quality clean biochar.

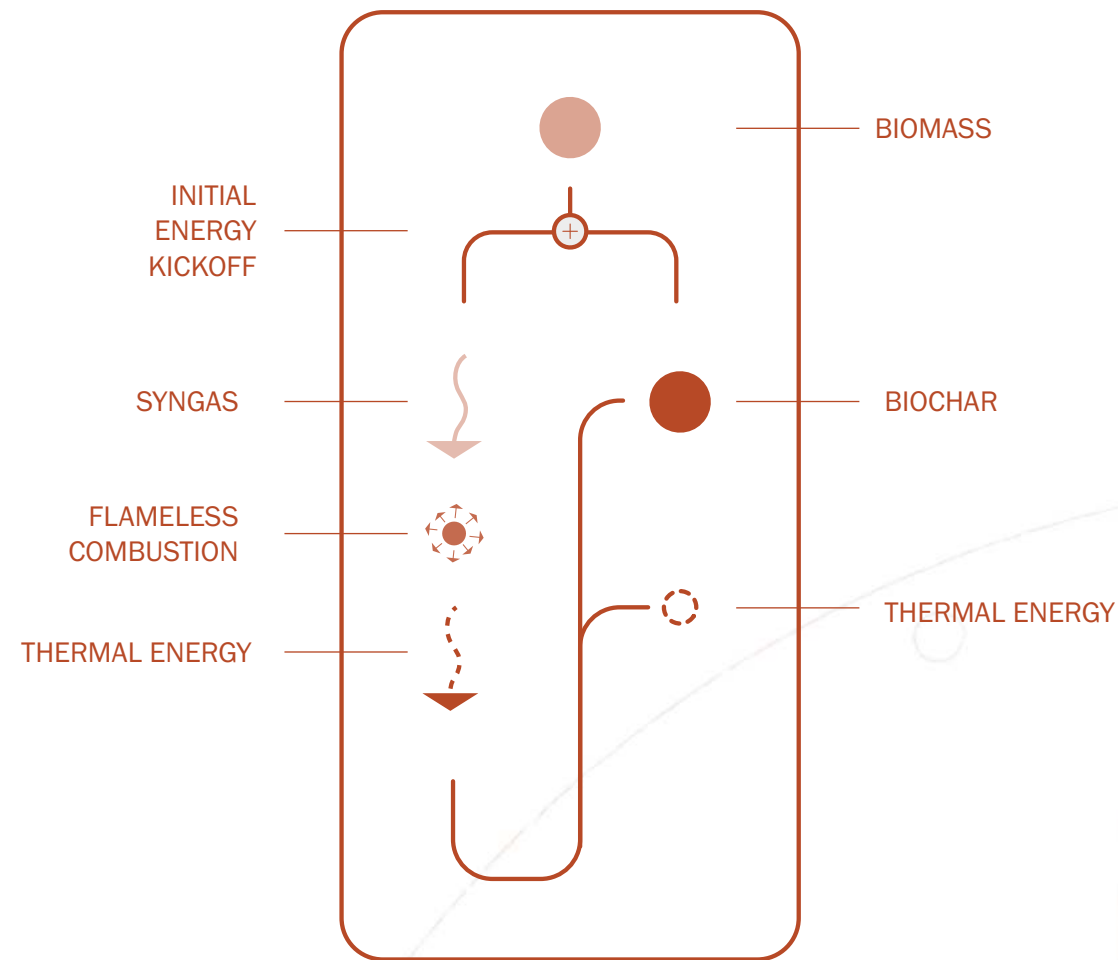
**CLEAN TAR FREE BIOCHAR PRODUCED AT NET ZERO ENERGY.**



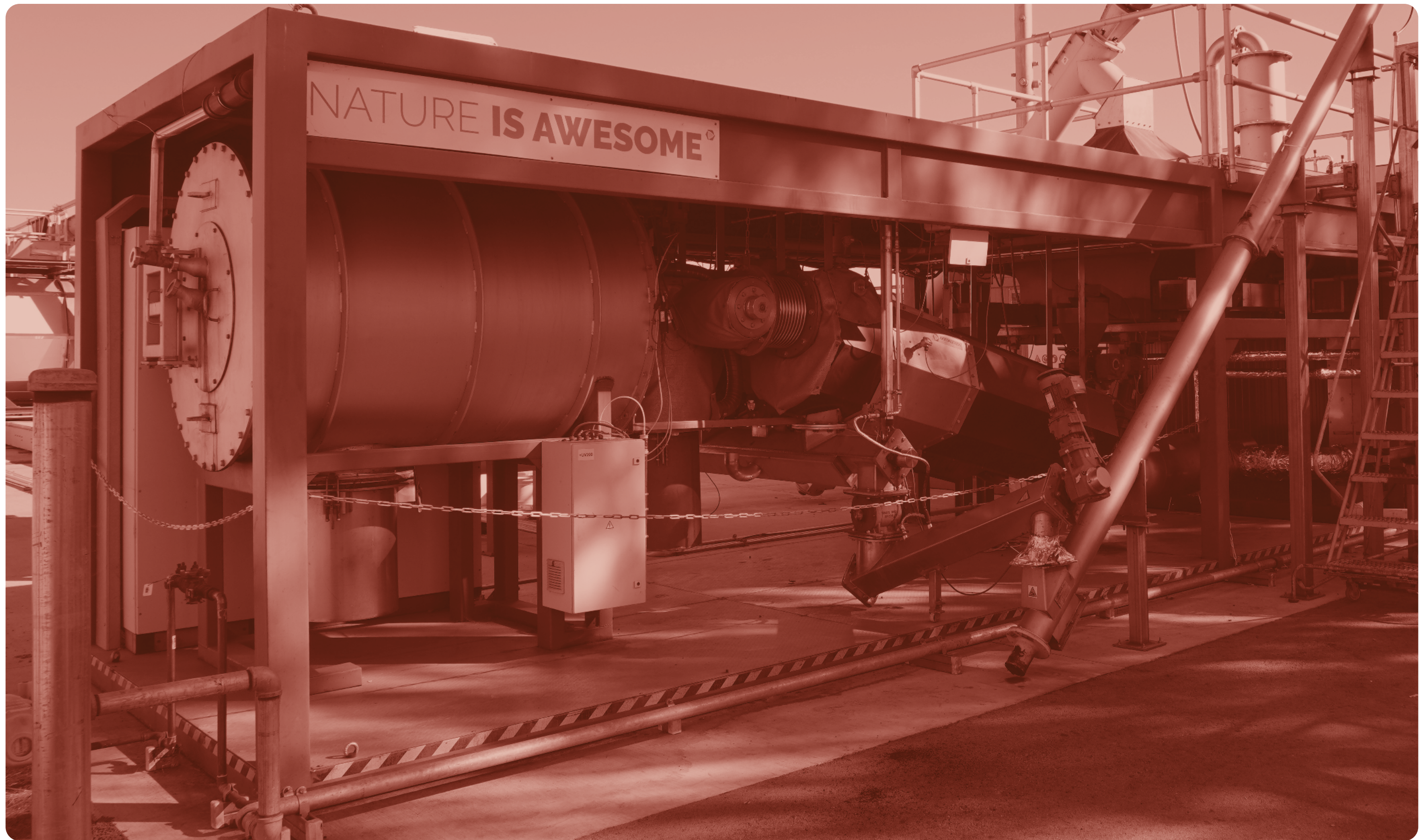
## CLOSED LOOP SYSTEM

As with all of our processes, we recirculate and reuse available energy within our system. In our P-Series Pyrolysis, we utilize syngas as it forms after an initial external energy kickoff to maintain temperature perpetually. The exhaust gases from the combustion chamber are passed through the annular space between the central tube and the outer casing of the pyro-reactor, allowing for a self sustained 24/7 heating system with no external energy required.

**OUR PYROLYSIS PROCESS IS SELF-SUSTAINED AND POWERED BY THE FEEDSTOCK ITSELF.**







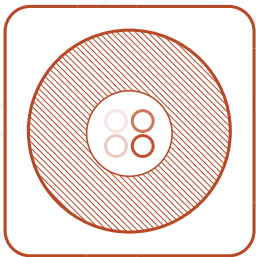


# BENEFITS

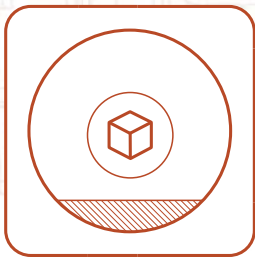
## FIRST OF ITS KIND

As the only full scale up and running wastewater pyrolysis operation in the US, and with 35+ installations worldwide, we have worked to build a resilient and capable system that stands out among the competition. We run our units under some of the most stringent permitting conditions in the world as recipients of both an SSI exemption from the US EPA and full permitting from BAAQMD (Bay Area Air Quality Management District).

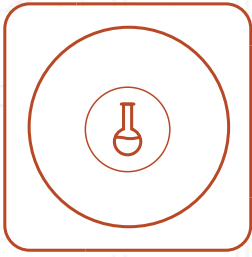
**WE ARE PROUDLY SHIFTING OUR INDUSTRY WITH SUSTAINABLE, POWERFUL, AND MODULAR PYROLYSIS TECHNOLOGY.**



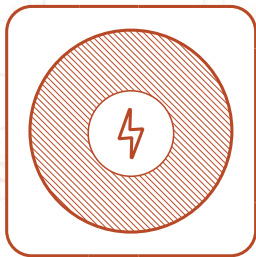
**MIXED**  
Organic feedstocks



**>90%**  
Volume reduction



**NO**  
PFAS/PFOAS/CEC's



**24/7**  
Self sustaining process

## READY FOR INSTALL

The P-Series system is compact, modular, and self-contained for easy installation and integration. Our Pyrolysis machines are pre-built, assembled, wired and tested at our manufacturing facilities and delivered in skids as a fully built system. At Bioforcetech, we close loops and create sustainable, circular economies at every scale. Our machines can be considered as a plug-and-play system, they can grow as the plant grows by simply adding more units without changing the original equipment or design.

**THE P-SERIES SYSTEM IS *PRE-INSTALLED* INSIDE A CONTAINED STRUCTURE, REQUIRING ONLY A FLAT CONCRETE PAD ON SITE.**

## ONE MACHINE, MULTIPLE FEEDSTOCKS

Though designed for biosolids treatment, our reactor is able to treat a wide range of materials or a mix of multiple feedstocks. The P-Series system can process digested/undigested bisolids, manure, green waste, wood waste, food waste, and any combination of these feedstocks.

**OUR *FEEDSTOCK FLEXIBLE* SYSTEM IS ABLE TO CHANGE AND GROW AS A PLANT INCORPORATES NEWER, GREENER PRACTICES.**



**Yard  
Waste**



**Municipal  
Residuals**



**Food  
Waste**



**Agricultural  
Waste**

## FLAMELESS COMBUSTION

Open combustion of any gas causes the erratic release of thermal energy and emissions, posing a danger to the installation and a loss of efficiency. Thanks to our proprietary flameless combustion chamber, all thermal energy is safely and fully utilized at a controlled combustion temperature. Our flameless burning system boasts extremely low NOx emissions, is the first pyrolysis process approved by the US EPA for biosolids, and is also the first system to meet emission requirements for both California and US EPA regulation. There is absolutely no tar associated with our combustion process or its byproducts, only thermal energy is left.

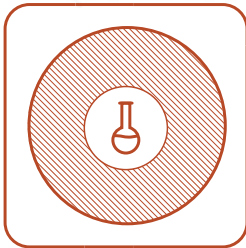
**THE P-SERIES PYROLYSIS MACHINE HAS BEEN DESIGNED TO MAXIMIZE THE ENERGY IT CREATES.**

# ADVANTAGES

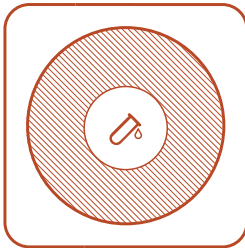
## PFAS/CEC REMOVAL

Bioforcetech has taken the PFAS issue as a personal challenge to overcome, and we are now proud to share that testing conducted on our technology shows considerable promise for its ability to successfully eliminate these harmful substances from input materials completely.

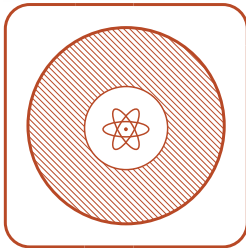
**MULTIPLE TESTS CONDUCTED CONFIRM BIOFORCETECH’S SYSTEM REMOVES PFAS, PFOA, AND PFOS FROM BIOSOLIDS COMPLETELY.**



**NO**  
PFAS



**NO**  
PFOAS



**NO**  
CEC's

**OurCarbon™**

[www.madewithourcarbon.com](http://www.madewithourcarbon.com)

Made with  
**OurCarbon™**

**FREE OFF-TAKE AND 10% NET PROFIT OF OurCarbon™ SALES.**

In 2020 we initiated a large scale research and development project finding new markets and innovations for our biochar. The material, called OurCarbon™, is a base material that is valued as a filtration medium, dye and colorant, pigment, material additive, and soil amendment. The use of OurCarbon™ biochar by large brands in industry will bolster the OurCarbon brand and turn waste into value.

We are so confident in OurCarbon that we are offering an exclusive offtake agreement of our biochar to clients. In this agreement, BFT retains ownership of the biochar produced and guarantees a \$0 disposal cost. In addition to that, knowing the potential markets and value of the biochar, BFT will share 10% of the net profits realized by the sale of the biochar with the client.

## PFAS TEST RESULTS

COMPOUND NAME	DRY BIOSOLIDS (NG/G)	BIOCHAR (NG/G)
PFBA	7.03	NOT DETECTED
3:3 FTCA	ND	NOT DETECTED
PFPeA	5.94	NOT DETECTED
PFBS	2.3	NOT DETECTED
4:2 FTS	ND	NOT DETECTED
PFHxA	33.7	NOT DETECTED
PFPeS	ND	NOT DETECTED
HFPO-DA	ND	NOT DETECTED
5:3 FTCA	64.5	NOT DETECTED
PFHpA	7.45	NOT DETECTED
ADONA	ND	NOT DETECTED
PFHxS	ND	NOT DETECTED
6:2 FTS	ND	NOT DETECTED
PFOA	89.1	NOT DETECTED
PFHpS	ND	NOT DETECTED
7:3 FTCA	40	NOT DETECTED
PFNA	5.3	NOT DETECTED
PFOSA	ND	NOT DETECTED
PFOS	26.3	NOT DETECTED
9CI-PF3ONS	ND	NOT DETECTED
PFDA	11.3	NOT DETECTED
8:2 FTS	5.68	NOT DETECTED
PFNS	ND	NOT DETECTED
Me FOSAA	23.5	NOT DETECTED
EtFOSAA	19.6	NOT DETECTED
PFUnA	3.39	NOT DETECTED
PFDS	ND	NOT DETECTED
11CI-PF3OUdS	ND	NOT DETECTED
10:2 FTS	ND	NOT DETECTED
PFDaA	5.85	NOT DETECTED
MeFOSA	ND	NOT DETECTED
PFTrDA	ND	NOT DETECTED
PFTeDA	2.44	NOT DETECTED
EtFOSA	ND	NOT DETECTED
PFHxDA	ND	NOT DETECTED
PFODA	ND	NOT DETECTED
MeFOSE	17.1	NOT DETECTED
EtFOSE	ND	NOT DETECTED

# OurCarbon™

## OurCarbon™ CARBON NEGATIVE BASE MATERIAL

While we are making strides within our industry, our vision does not stop at the treatment plant. We are developing biochar materials to be applied to industry in place of fossil fuel based equivalents. Our biochar, called OurCarbon™, is available to manufacturers and brands that want to incorporate this carbon negative material into their products as a sustainable colorant, filter, insulator, or material additive. Working together, we can create and place a material that has huge potential to draw down carbon emissions and help society rethink waste as a valuable asset.

**MULTIPLE TESTS CONDUCTED CONFIRM BIOFORCETECH'S SYSTEM REMOVES PFAS, PFOA, AND PFOS FROM BIOSOLIDS COMPLETELY.**



Colorant



Additive



Dye



Ammendment



Filter

## REPLACING CARBON INTENSIVE MATERIALS

A base material for a myriad of applications, OurCarbon can be used in place of petroleum based products as a colorant, material additive, fabric dye, soil amendment, and filtration substrate.

Its most ubiquitous potential may be in its ability to replace carbon black, a pigment produced by burning coal that is used as a colorant in almost everything we touch. While every ton of carbon black that is produced releases 3 tons of CO<sub>2</sub>e, the same amount of OurCarbon sequesters 10.

Made with  
**OurCarbon™**

[www.madewithourcarbon.com](http://www.madewithourcarbon.com)



# P-5 SPECIFICATIONS

## PERFORMANCE SPECS

BIOCHAR PRODUCTION	UP TO 555 TON/YEAR*
OPERATING HOURS	UP TO 7,500 HOURS/YEAR
INPUT MATERIAL	UP TO 1,000 DRY TON/YEAR*
POWER CONSUMPTION	AS LOW AS 23 kWh/WET TON
EXCESS THERMAL ENERGY	UP TO 511,000 BTU/HOUR*
INLET FUEL LIMIT	1.7 MMBTU/HOUR

\*Values subject to change based on biosolids solid content, LHV and volatile content.

## INPUT REQUIREMENTS

LVH	> 4,300 BTU/LB AS RECEIVED
SOLID CONTENT	>75% SOLID
PARTICLE SIZE	< 1 <sup>1/4</sup> ALL DIRECTIONS
PARTICLE DISTRIBUTION	95% < 1"

## WEIGHT & FOOTPRINT

WEIGHT	28 TONS
LENGTH	29' 6"
WIDTH	30'
HEIGHT	16' 1"

## NATURAL GAS DATA

CONNECTION	1" BALL VALVE
GAS REGULATOR	> 33 LB/HOUR
GAS PRESSURE	20" OF WATER +/- 5%
ANNUAL USAGE	5,100 LB/YEAR

## ELECTRICITY DATA

CONNECTION	3PH, 480V, 64 AMPS, 60 HZ
LAN	AT LEAST 1MB/SECOND

## COMPRESSED AIR DATA

AIR PRESSURE	115 PSI
AIR QUALITY	DRY, NO OIL

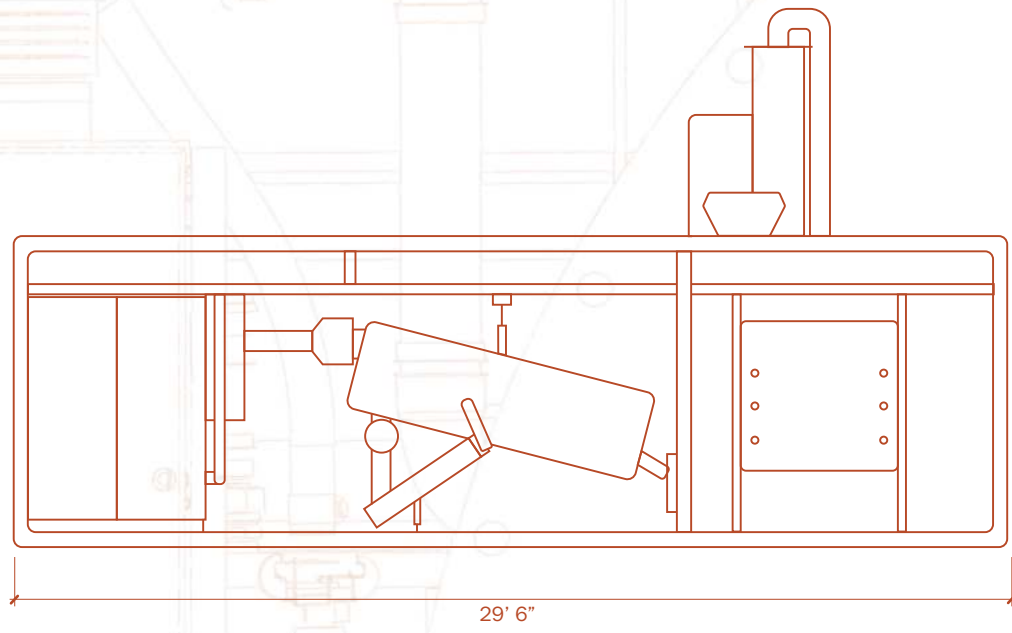
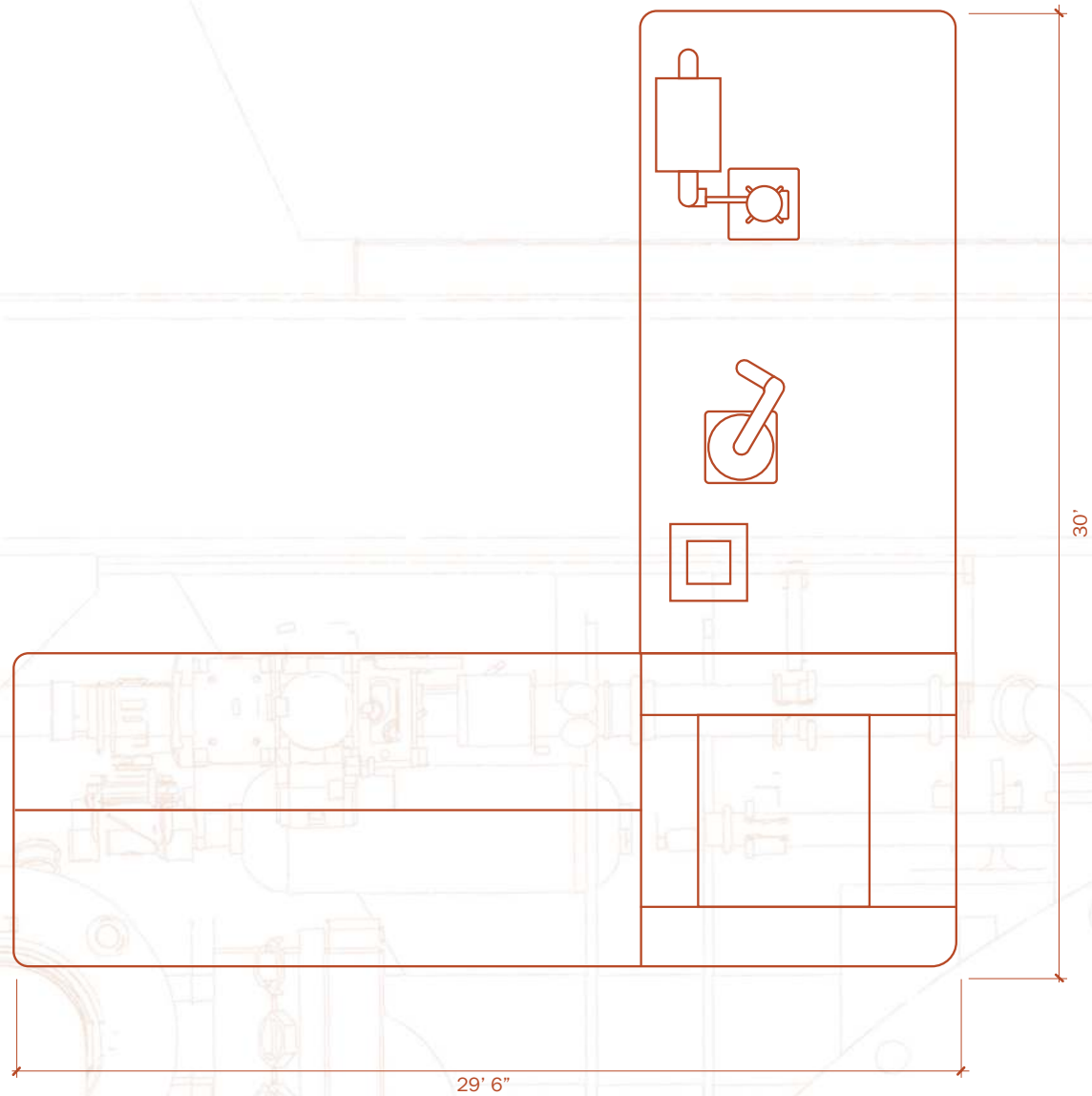
## POTABLE WATER

PIPE DIAMETER	1"
FLOW RATE	> 22 GPM
PRESSURE	> 85 PSI < 145 PSI
AVERAGE USAGE	1.5 GPM

## WATER DISCHARGE

CONNECTION	3.5"
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# P-5 SPECIFICATIONS





# P-3 SPECIFICATIONS

## PERFORMANCE SPECS

BIOCHAR PRODUCTION	UP TO 1,940 TON/YEAR*
OPERATING HOURS	UP TO 7,500 HOURS/YEAR
INPUT MATERIAL	UP TO 3,500 DRY TON/YEAR*
POWER CONSUMPTION	AS LOW AS 25 kWh/WET TON
EXCESS THERMAL ENERGY	UP TO 2MMBTU/HOUR*
INLET FUEL LIMIT	5.12 MMBTU/HOUR

\*Values subject to change based on biosolids solid content, LHV and volatile content.

## INPUT REQUIREMENTS

LVH	> 4,300 BTU/LB AS RECEIVED
SOLID CONTENT	>75% SOLID
PARTICLE SIZE	< 1 <sup>1/4</sup> ALL DIRECTIONS
PARTICLE DISTRIBUTION	95% < 1"

## WEIGHT & FOOTPRINT

LENGTH	42' 9"
WIDTH	22' 10"
HEIGHT	28' 8"
WEIGHT	56.5 TONS

## NATURAL GAS DATA

CONNECTION	1" BALL VALVE
GAS REGULATOR	> 130 LB/HOUR
GAS PRESSURE	40" OF WATER +/- 5%
ANNUAL USAGE	10,200 LB/YEAR

## ELECTRICITY DATA

CONNECTION	3PH, 400/480V, 200 AMPS, 50/60 HZ
LAN	AT LEAST 1MB/SECOND

## COMPRESSED AIR/NITROGEN DATA

AIR PRESSURE	115 PSI
AIR QUALITY	DRY, NO OIL
NITROGEN PRESSURE	115 PSI
NITROGEN QUALITY	>98%

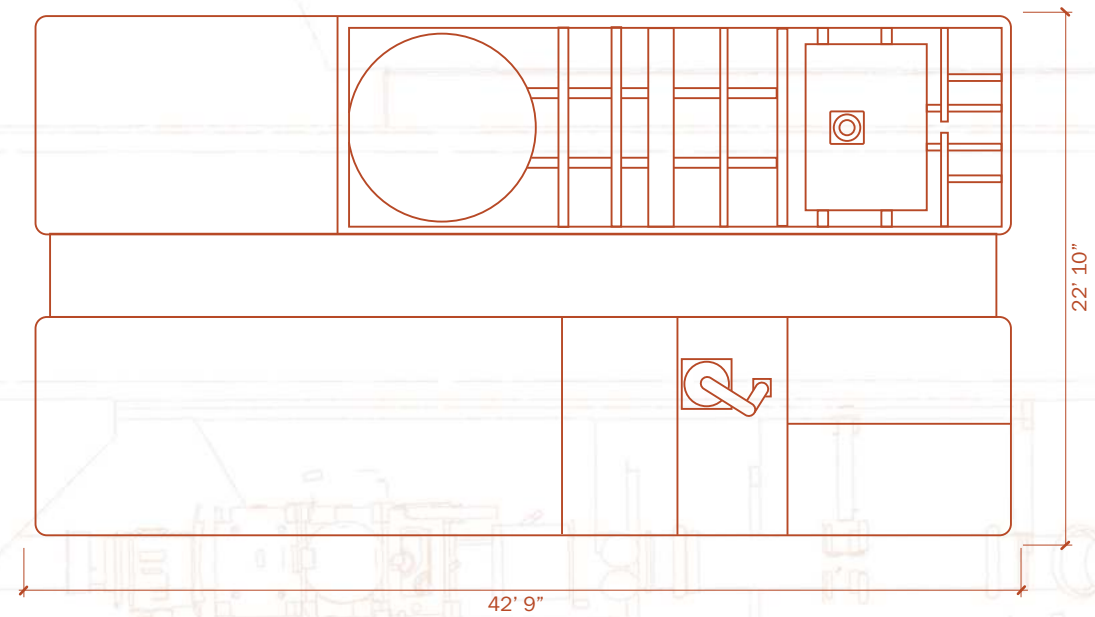
## POTABLE WATER

PIPE DIAMETER	1 <sup>1/2"</sup>
FLOW RATE	> 22 GPM
PRESSURE	115 PSI
AVERAGE USAGE	1.5 GPM

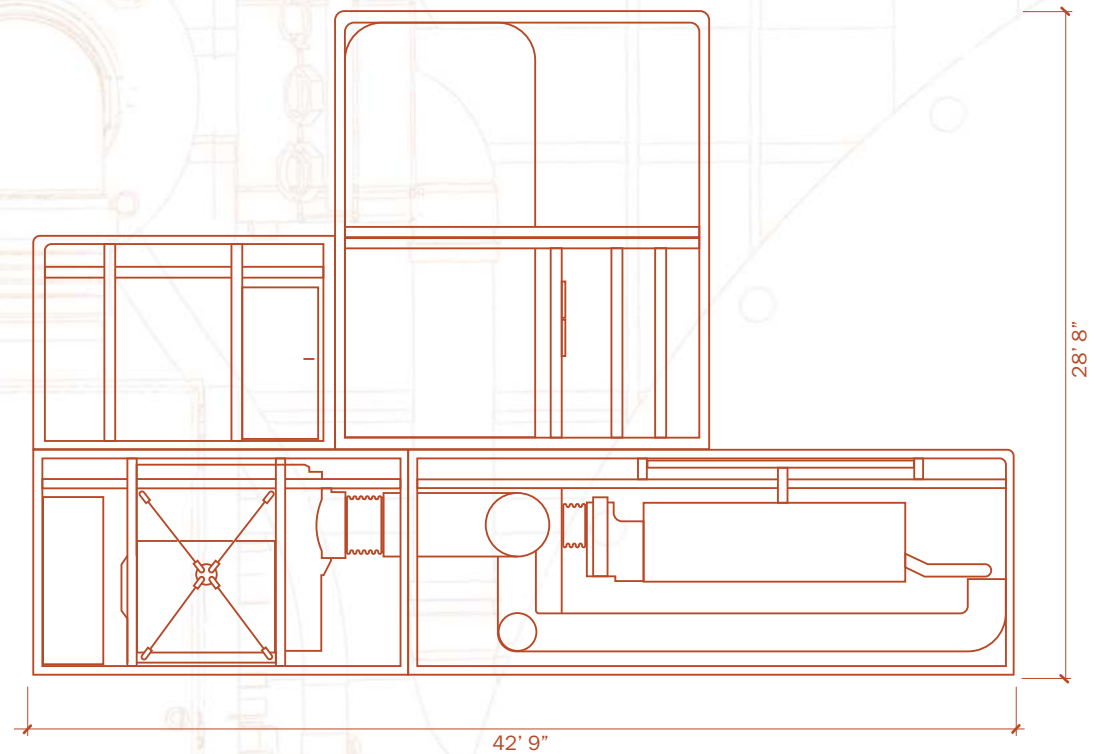
## WATER DISCHARGE

CONNECTION	3.5"
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# P-3 SPECIFICATIONS




① TOP




② SIDE



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